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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,466	10/23/2003	Sachin Ahuja	10006.001510	7246

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OKAMOTO & BENEDICTO, LLP
P.O. BOX 641330
SAN JOSE, CA 95164

EXAMINER	
CUNNINGHAM, GREGORY F	
ART UNIT	PAPER NUMBER
2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/692,466	AHUJA ET AL.	
	Examiner	Art Unit	
	Greg F. Cunningham	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to communications of application received 10/23/2003.

2. The disposition of the claims is as follows: claims 1 - 16 are pending in the application. Claims 1 and 14 are independent claims.

3. The group and/or Art Unit location of your application has changed. To aid in the correlation of any papers for this application, all further correspondence should be directed to Group Art Unit 2624 (effective 03/07). Please be sure to use the most current art unit number on all correspondence to help us route your case and respond to you in a timely fashion.

4. When making claim amendments, the applicant is encouraged to consider the references in their entireties, including those portions that have not been cited by the examiner and their equivalents as they may most broadly and appropriately apply to any particular anticipated claim amendments.

Drawings

5. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because FIG. 3 consists of multiple figures. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

(Examiner's Note: recommend labeling FIG. 3 as FIG. 3a through FIG. 3d.)

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. (See: Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility). To be eligible for patent protection, the claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result".

The claimed invention as a whole must be useful and accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." State Street, 149 F.3d at 1373-74, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96 (1966)); In re Fisher, 421 F.3d 1365, 76 USPQ2d 1225 (Fed. Cir. 2005); In re Ziegler, 992 F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)).

Said claims' lack of "useful, concrete and tangible result" are due in part, inter alia, by reason of:

a.) Although independent claim 1 cites "computing an error statistic", the claim may just as well preclude a computer.

b.) While the mention of "pixels" in independent claim 1 at "wherein a super-segment is a new segment comprising all pixels formerly contained in one of two segments that

were merged" may imply a computer screen, TV screen, monitor, digital billboard, digital graphics screen, etc.; the claim as a whole basically merges smaller groups (segments) into larger groups (segments) comprising pixels, what any skilled artist can do on a pixel canvas.

c.) With respect to claims 14 and 15, although reference is given to a computer, CPU and memory, the implementation may be taking place in computer memory whereby the claimed invention as a whole still lacks a "useful, concrete and tangible result".

d.) Said merging is never claimed to be rendered on a computer display.

8. Dependent claims 2-13 are rejected under 35 U.S.C. 101 because they offer no additional sufficient support for that would produce a "useful, concrete and tangible result".

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential method steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted step is:

The claim may imply that a relationship exists between "determining whether said smallest error statistic is sufficiently small to merit merging of the corresponding pair of segments; and" and "merging said corresponding pair of segments to create one supersegment, ...", but does not actually indicate that said "merging said corresponding pair of segments to create one supersegment" is based on said "determining whether said smallest error statistic is sufficiently small to merit merging of the corresponding pair of segments, ...".

11. Claims 3, 5 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claim 3 recites the limitation "the threshold value" in first line of claim. There is insufficient antecedent basis for this limitation in the claim.

B. Claim 3 recites the limitation "the total boundary length" in third line of claim. There is insufficient antecedent basis for this limitation in the claim.

C. Claim 5 recites the limitation "the threshold value" in first line of claim. There is insufficient antecedent basis for this limitation in the claim.

D. Claim 5 recites the limitation "the size" in first line of claim. There is insufficient antecedent basis for this limitation in the claim.

E. Claim 10 recites the limitation "the merging parameters" in first line of claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imagawa et al., (US 6,819,782 B1), hereinafter Imagawa.

A. Imagawa discloses claim 1, "A method of merging segments to form supersegments in an image, wherein said image consists of a plurality of segments that are constituent portions of the image, the method comprising:

identifying at least one candidate segment(s) [col. 5, lns. 30-34, particularly corresponds with 'cluster evaluation part for classifying', wherein 'cluster' corresponds with "segment"];

identifying at least one neighboring segment(s) for each candidate segment [col. 5, lns. 4-37, particularly corresponds with 'determining which of the hand shape images belongs to which cluster for storage into the hand shape image information storage part'];

computing an error statistic for each pair, wherein each pair consists of a candidate segment and a corresponding neighboring segment [col. 5, lns. 36-37, particularly at 'and obtaining statistical information about each cluster'; and col. 2, lns. 18-65, wherein 'featured points' corresponds to "candidate segment" and 'covariance matrix Q' corresponds to "error statistic for each pair"; and in col. 31, lns. 31-43, wherein 'maximum likelihood' corresponds to "error statistic for each pair".

Although this column (col. 31, lns. 31-43) does not detail "each pair consists of a candidate segment and a corresponding neighboring segment", it does imply this via 'and finally combining the relevant shape information and the position information in each of the clusters' whereby 'the hand shape and hand position are determined by first photographing a hand in a certain shape and position from several directions with a plurality of cameras, secondly by determining each obtained image to the appropriate cluster by the maximum likelihood cluster judgement part'];

determining a neighboring segment that results in a smallest error statistic for a given candidate segment [col. 5, lns. 47-55 at 'a maximum likelihood cluster judgement part for comparing the eigenspace projection coordinates calculated by the second eigenspace projection part with each of coordinates included in the statistical information stored in the cluster information storage part, and determining which cluster is the closest; an image comparison part for comparing the hand shape images included in the closest cluster with the input hand shape image'; see also col. 31, lns. 31-43 supra];

determining whether said smallest error statistic is sufficiently small to merit merging of the corresponding pair of segments [col. 5, lns. 55-60 at 'and determining which of the hand shape images is analogous most closely to the input hand shape image; and a shape/position output part for obtaining, for output, the shape information and the position information on the most analogous hand shape image from the hand shape image information storage part.' and 'maximum likelihood cluster judgement']; and

merging said corresponding pair of segments to create one supersegment, wherein a supersegment is a new segment comprising all pixels formerly contained in one of the two segments that were merged [col. 6, lns. 54-60 at 'the maximum likelihood cluster judgement part compares each of the eigenspace projection coordinates calculated by the second eigenspace projection part with the statistical information, and determines which cluster is the closest, and the image comparison part merges the closest clusters determined by the maximum likelihood cluster judgement part']" [as detailed]. Wherein 'cluster' corresponds to "segment".

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply 'covariance matrix Q', 'maximum likelihood cluster judgement',

'eigenspace projection' and 'determines which cluster is the closest, and the image comparison part merges the closest clusters' as disclosed by Imagawa.

B. Per independent claim 14, this is directed to an apparatus for performing the method of independent claim 1, and therefore is rejected to independent claim 1.

C. Imagawa discloses claim 5, "The method of claim 1, wherein the threshold value varies according to the size of the candidate segment" supra for claim 1 and furthermore in col. 34, lns. 46-53, corresponding with 'area size is closer to the region where the hand is detected as a hand region'.

D. Imagawa discloses claim 7, "The method of claim 1, wherein multiple neighboring segments are merged with a candidate segment wherein each of the neighboring segment's error statistic is below the threshold value" supra for claim 1, wherein 'the closest clusters determined in the judgement step are merged' corresponds to "multiple neighboring segments".

E. Imagawa discloses claim 10, "The method of claim 1, wherein one or more of the merging parameters are calculated in a neighborhood of the common boundary between the candidate segment and the neighboring segment" supra for claim 1 and furthermore in col. 26, lns. 44-55, corresponding with 'initial parameters may include the eventual number of clusters, a convergence condition for reallocation, a judgement condition for a cluster very small in number of hand shape images or for isolated data, a condition for cluster splitting and merging, or a termination condition for repetitive calculation.'

F. Imagawa discloses claim 11, "The method of claim 10, wherein said neighborhood of the common boundary consists of a fixed number of pixels on either side of and perpendicular to each boundary edge" supra for claim 10 and furthermore in col. 2, lns. 28-46, corresponding with

'U denotes a column vector obtained by subjecting images of n.times.m pixels to raster scanning' and 'hand shape images onto an eigenspace having the eigenvectors as a basis' corresponds to orthogonal and therefore perpendicular.

G. Imagawa discloses claim 12, "The method of claim 10, wherein said merging parameters are calculated during a raster-scan through an array of pixels and stored in a table, and wherein said merging parameters are updated whenever two or more segments are merged to form a supersegment to correct the values for the new supersegment and its neighboring segments, whereby merging decisions for a plurality of candidate segments may be made by referring to the data contained in said table" supra for claim 10 and furthermore in col. 2, lns. 28-65, corresponding with 'U denotes a column vector obtained by subjecting images of n.times.m pixels to raster scanning'. Wherein vector U corresponds to "table" and merging is function of eigenspace which depends on vector U (i.e. table).

H. Per dependent claims 15 and 16, these are directed to an computer apparatus with CPU (processing) and memory and application program for performing the method of independent claim 1, and therefore is rejected to independent claim 1.

14. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imagawa as applied to claim 1 above, and further in view of Official Notice.

A. Imagawa discloses claim 3, supra for claim 1, in as much as Imagawa discloses claim 3, Official notice is taken that the art is replete with generic threshold characteristics based on cutoff percentage of a total length, range or segment establishes minimum and/or maximum threshold value limits.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply 'covariance matrix Q', 'maximum likelihood cluster judgement', 'eigenspace projection' and 'determines which cluster is the closest, and the image comparison part merges the closest clusters' as disclosed by Imagawa in combination with threshold cutoff percentages disclosed by Official Notice and motivated to combine the teachings because it would predetermine threshold value in relation to hand contour and wrist as revealed in col. 21, lns 34-67.

Allowable Subject Matter

15. Claims 2, 4, 6, 8, 9 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and overcome the 101 and 112, 2nd paragraph, set forth in this Office action.

Responses

16. Responses to this action should be mailed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Inquiries

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory F. Cunningham whose telephone number is (571) 272-7784.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Bella can be reached on (571) 272-7778. The Central FAX Number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

G.F. Cunningham

Gregory F. Cunningham
Examiner, Art Unit 2624

gfc

3/15/2007

Matthew C. Bella

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600